WHAT IS CLAIMED IS:

1   1.   A method for handling write errors in a non-redundant disk array

2   storage system, comprising:

3   issuing a command to write and verify data transfer when requested to write

4   data to a specified location address that is stored in an error table; and

5   reassigning the data to a new location address when the command to write

6   and verify the data transfer is unsuccessful.

1   2.   The method of claim 1 wherein the error table records error locations

2   on a disk drive.

1   3.   The method of claim 1 further comprising transferring the data to the

2   specified location address when a good status is returned in response to the

3   command to write and verify the data transfer.

1   4.   The method of claim 1 wherein the error table comprises a write

2   recovery table.

1   5.   The method of claim 1 wherein the error table comprises a combined

2   write recovery table and bad data table.

1   6.   The method of claim 1 wherein the command to write and verify the

2   data transfer comprises a write/verify command.

1   7.   The method of claim 1 wherein the command to write and verify the

2   data transfer comprises a write command followed by a read command with the

3   force unit access bit being set to 1 to force the data to be read from the disk drive

4   rather than from disk drive cache.

1   8.   The method of claim 1 wherein the command to write and verify the

2   data transfer is unsuccessful only when a predetermined number of write and verify

3   retries is exhausted.

1   9.   The method of claim 1 further comprising:

2   verifying the reassigning of data to a new location address;

3   detecting an error for the reassigning;

4   retrying the reassigning for a predetermined number of times; and

5   returning a fatal error status and marking the disk offline when the

6   predetermined number of times is exhausted.

1   10.   The method of claim 1 further comprising deleting the specified

2   location address that is stored in the error table when the reassign of data is

3   successful.

1   11.   The method of claim 1 further comprising deleting the specified

2   location address that is stored in the error table when the command to write and

3   verify the data transfer is successful.

1   12.   A storage system, comprising:

2   an array of storage devices; and

3   a storage controller, coupled to the array of storage devices, the storage

4   controller including a memory for maintaining an error table, the storage controller

5   further being configured to issue a command to write and verify data transfer when

6   requested to write data to a specified location address that is stored in an error table

7   and reassign the data to a new location address when the command to write and

8   verify the data transfer is unsuccessful.

1   13.   The storage system of claim 12 wherein the error table records data

2   error locations on a disk drive.

1   14.   The storage system of claim 12 wherein the controller transfers the

2   data to the specified location address when a good status is returned in response to

3   the command to write and verify the data transfer.

1   15.   The storage system of claim 12 wherein the error table comprises a

2   write recovery table.

1   16.   The storage system of claim 12 wherein the error table comprises a

2   combined write recovery table and bad data table.

1   17.   The storage system of claim 12 wherein the command to write and

2   verify the data transfer comprises a write/verify command.

1   18.   The storage system of claim 12 wherein the command to write and

2   verify the data transfer comprises a write command followed by a read command

3   with the force unit access bit being set to 1 to force the data to be read from the

4   storage device rather than from cache of the storage controller.

1   19.   The storage system of claim 12 wherein the command to write and

2   verify the data transfer is unsuccessful only when a predetermined number of write

3   and verify retries is exhausted.

1   20.   The storage system of claim 12 wherein the storage controller further

2   verifies the reassigning of data to a new location address, detects an error for the

3   reassigning, retries the reassigning for a predetermined number of times, returns a

4   fatal error status and marks the storage device offline when the predetermined

5   number of times is exhausted.

1   21.   The storage system of claim 12 wherein the storage controller deletes

2   the specified location address that is stored in the error table when the reassign of

3   data is successful.

1   22.   The storage system of claim 12 wherein the storage controller deletes

2   the specified location address that is stored in the error table when the command to

3   write and verify the data transfer is successful.

1   23.   A error table disposed in a storage controller, the error table

2   configured with addresses for data error locations on a storage device so that for a

3   write request, the storage controller knows to perform a write and verify command to

4   transfer the data to the storage device and to verify the successful transfer of the

5   data to the storage device.

1   24.   The error table of claim 23 further comprising a write recovery bit to

2   indicate when an address associate therewith requires a write recovery during a

3   write.

1   25.   The error table of claim 24 wherein the write recovery bit allows a bad

2   data table to be combined with the write recovery table.

1   26.   The error table of claim 25 wherein on a read the error table is

2   searched only for an address specified in a read request together with an associated

3   write recovery bit being set to 0.

1   27.   A memory configured for storing an error table and data fields, the

2   error table comprising a non-volatile array configuration information storage area.

1   28.   An article of manufacture comprising a program storage medium

2   readable by a computer, the medium tangibly embodying one or more programs of

3   instructions executable by the computer to perform a method for handling write

4   errors in a non-redundant disk array storage system, the method comprising:

5   issuing a command to write and verify data transfer when requested to write

6   data to a specified location address that is stored in an error table; and

7   reassigning the data to a new location address when the command to write

8   and verify the data transfer is unsuccessful.

1   29.   A method for handling write errors in a non-redundant disk array

2   storage system, comprising:

3   recording read error locations in an error table;

4   issuing a command to write and verify data transfer when requested to write

5   data to a specified location address that is stored in the error table; and

6   reassigning the data to a new location address when the command to write

7   and verify the data transfer is unsuccessful.